The Cary Arboretum

of The New York Botanical Garden

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Is "Ethnobotany" in Your Vocabulary?

by Robin Parow-Place

"It is the study of the way people of different environments use the plant life they have available to them."

"It is the history of the use of plants by people, and how plant use ties into their culture."

These are definitions of "ethnobotany" according to Martha Atwell, a college freshman, and Dana Gips, a college junior, who, during a four-week semester break from Bard College, came to the Arboretum to research maple sugaring techniques used by native Americans. The results of their efforts, in the forms of replica maple sugaring equipment and a model of a maple sugaring camp, will be on exhibit during the Arboretum's "Maple Sugaring Weekend," March 20 and 21, and during "Maple Sugaring Weeks" for school children March 15 through April 2.

Both young women consider the opportunity to work at the Cary Arboretum an important one. They share a common interest in plants and the important roles plants play in the lives of people. Both, in fact, have been vegetarians for over three years.

Martha, a creative writing major, concentrated most of her research on the history of maple sugaring according to the Iroquois, Delaware, Housatanic and Wappinger Indian tribes. One of her projects – to construct a "makuk" or birch bark utensil for storing and carrying maple sap – met with interesting and enlightening results. Working only from a photograph in a reference book, the pattern for the makuk was two days in the making. Upon assembling the container by sewing with spruce root, the bark cracked, returning her work to square one. The second try met with more gratifying results: she used an office hole-puncher to make the stitching holes, (as compared to a sharpened bone or stone awl used by the Indians) and warmed the bark over an electric hot plate during the assembly procedure to keep the materials pliable. When completed, balsam gum and pine pitch were used to seal the holes. Martha reluctantly admits that the entire process took between 15 and 20 hours, even with 20th century conveniences. With practice, she could probably, like a skilled Indian, complete one in an hour.

Another of Martha's projects involved the recreation of a hoop and pole game in which a hoop, made of wood with rawhide spokes, was rolled and chased by men who tried to throw a pole through the hoop, stopping it. "Most tribes, especially the Delawares, were fond of gambling," she smiled, "This sport, with its fairly complicated rules, was probably played as a gambling game."

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Dr. Peter Dykeman and Martha Atwell compare their homemade birch bark maple sugaring utensils to those found in a book on ethnobotany.

From the forest I look
On a tumbling leaf
Skating in winter rhythm,
The wind blows hard on hollow steps
In endless cracked snow
From the hidden roots
The soft breath will rise
Spring's silent laughter,
The maple moon.

Martha Atwell

Department of Agriculture Supports Dr. Tillman

Man's impact on his environment and the route he will take to minimize future impact was the issue of major concern at the annual meeting of the American Association for the Advancement of Science (AAAS), held recently in Washington, D. C.

In a presentation to an international group of scientists, New York Botanical Garden Cary Arboretum ecologist Dr. Robert (Gus) Tillman, along with economist Yao-chi Lu of the U.S. Department of Agriculture, and sociologist C.P. Wolf of the Polytecnic Institute of New York, reviewed theories and knowledge that will be the basis for a two-year study supported by the U.S. Department of Agriculture.

During the past ten years with the Cary Arboretum, Dr. Tillman has served as a consultant in many developing countries for several different purposes, including production of a world-wide manual for irrigation techniques.

In this recently approved plan to study the socioenvironmental impacts of American agriculture, the U.S.D.A. will provide $80,000 during two years for research by the Cary Arboretum and the Polytecnic Institute. Through investigation of agricultural techniques used today, the three scientists hope to predict the impacts of emerging agricultural methods, and recommend ways to protect the environment through the turn of the century and beyond. "By informing the U.S.D.A. about problem areas," reports Dr. Tillman, "decisions on allocations for

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At the Garden

Spring is a special time at the New York Botanical Garden, and this year the horticulture staff wants everyone "to catch spring fever" at the Garden's beautiful Enid A. Haupt Crystal Palace in the Bronx.

Through March 21, the daffodil show, featuring in abundance several varieties of daffodils, white hyacinths, species crocus, and yellow, white and bicolor early-flowering tulips, will also include flowering shrubs such as forsythia, azaleas and quince. Also, many colorful South African bulbs and succulent plants will begin their blooming period during this time.

On March 26, the tulip show opens, featuring 10,000 tulips, 2,000 hyacinths, and flowering azaleas through April 18. The South African plants will continue their blooming period during this show, and will be joined by the premiere of a three-month flowering period in the American Desert House.

A special five-day orchid show begins April 21, when the Greater New York Orchid Society will exhibit their orchids in the palm house, fern gallery and subtropical gallery under natural settings. Lectures, demonstrations, and sales of orchids will be included in this event.

An exhibit of spring perennials April 30 through May 16 will include displays of potted herbaceous perennials in the Conservatory, complemented by a glorious outdoor show featuring azaleas, rhododendrons and flowering dogwoods.

The Enid A. Haupt Conservatory is open Tuesday through Sunday, 10 a.m. to 5 p.m. Members of the Arboretum are admitted free to the Conservatory, and Wednesday is "free day," when the general public is also admitted without charge.

A new café located in the Hanging Garden Room of the Conservatory is open for light lunches and snacks on Wednesdays and weekends, 11 a.m. to 4 p.m.

Director's Notes - Methane System in Progress

Fermentation chambers to produce methane and organic fertilizers are under construction near the Arboretum's nursery. These display and education facilities should be fully operational within the year, and will open new opportunities for students and scientists to study alternative energy systems and conservation.

The chambers and buildings are being erected under the direction of Millbrook resident, Kenneth Aylward, Construction Manager. Technical control is the responsibility of Mario D. Penagos, and his associate and son, Mario Penagos, who are visiting from Guatamala to consult on behalf of Bionomic Resources Corporation, the firm that is building the system in a joint project with the Arboretum. The senior Mr. Penagos is an agronomic engineer who originally developed this process in Guatemala twenty-five years ago, and he now has twenty similar facilities operating in his home country.

The project is progressing in two stages. Phase one, visible now from within the grounds, is an experimental system that will enable small scale testing of organic materials of possible interest. Phase two will complete a plant capable of meeting the energy needs of the all-electric solar building and the greenhouse. When the plant is completed, renewable biomass will be used to generate biogas, a mixture of carbon dioxide and methane that can power electrical generators and that can be converted to other products. It will also produce organic fertilizers. Testing of the latter will seek to demonstrate their utility for several agricultural applications now requiring great quantities of irreplaceable fossil fuel.

Dr. Willard W. Payne
Director

Emil Keller to Exhibit Photographs

"Seeing in Light and Color" is the title of a photography exhibit which will be on display beginning March 28 in the Arboretum's solar-heated Plant Science Building, Route 44A.

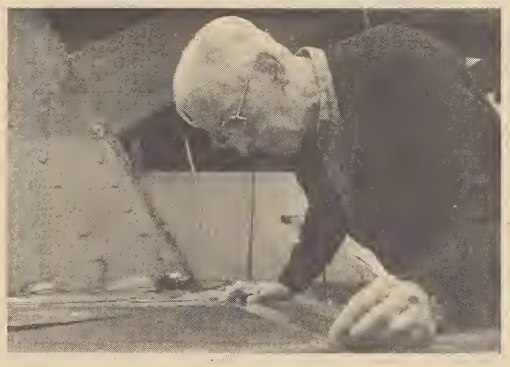
Photographer Emil Keller, who has been an Arboretum volunteer since July, 1981, will exhibit a total of 40 color and black-and-white photographs taken of subjects as tiny as a cross-section of a kidney magnified 150 times, and as broad as landscapes of England, France and Nova Scotia.

The purpose of the exhibit is to illustrate the extensive application of photography. "A person with a camera can and should see things no matter how small or large," says Mr. Keller, who does a wide variety of photographic work for the Arboretum, especially with the use of a microscope.

German born, Emil Keller worked for Ernst Leitz, Inc., for over 40 years. His professional interests in scientific instruments and photographic equipment introduced him to the Cary staff as the Arboretum was developing in the early 1970's.

A gallery reception Sunday, March 28, 1:30 to 4:30 p.m., will open the exhibit, which will be on display through April 18.

Emil Keller prepares for his photography exhibit, which opens March 28.



Book Review

by Betsy Calvin, Arboretum Librarian

Books on organic orcharding, solar greenhouses, and alternative energy in the home are among those new to the circulating collection at the Cary Arboretum.

Organic Gardening by Gene Logsdon, is an excellent handbook for the small or large landowner who wants to raise fruit or nut trees without the use of chemical sprays or fertilizers. Mr. Logsdon lists in detail the steps in selecting the proper varieties for each climate zone, and includes information on tree pruning, planting, grafting and natural pest controls. There are also several sample landscape plans for homesites ranging from 1/4 acre to 80 acres.

For those who plan to build a solar greenhouse, or for those fortunate to already own one, read *Growing Food in Solar Greenhouses* by Delores Wolf. The book is arranged by months, and includes a reference for raising fruits, vegetables, and herbs. Weather maps, notes on record keeping, and chapters on microclimate environments, soils, propagation and pests are included.

Superhouse, by Don Metz lists the advantages and disadvantages of earth-sheltered, double-enveloped and superinsulated homes. Geared towards those who need basic information on building or remodeling, the illustrations are clear and simple, and the text provides some thoughtful information.

Heat Pumps, an Efficient Heating and Cooling Alternative, by Dermot McGuigan, contains all the information anyone might want to know on their use, effectiveness, components, types and installation. The pictures are clear, the text is easy to follow, and the author includes a manufacturer's index at the back of the book.

Also written by Delores Wolf, *The Harrowsmith Readers* are popular articles from the Harrowsmith Magazine published in Canada. The articles deal with various aspects of country life and homesteading and should provide good reading for those with a real "love for the earth." Volumes I and II are available in the circulating collection.

The Arboretum's library, located on the first floor of the solar heated Plant Science Building, Route 44A, Millbrook, is open weekdays, 9 a.m. to 4 p.m. Books in the circulating collection are available for loan to "Friends of the Arboretum."

Ethnobotany

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For the first time, Dana Gips' majors of fine arts and environmental studies were brought together in a project which necessitated ethnobotanical research and an artistic eye. Her model of a maple sugaring camp, complete with miniature figures, buildings and utensils, exemplifies the sugaring camps fashioned by native Americans of the Northeast.

"Maple sugaring was womens' work," she says. "In late February or early March, during the time of the "maple moon," the women would prepare the special camp used year after year during the sap-running season."

According to historical records, the sugar maples were tapped by making diagonal slashes four inches long, two inches deep, and at the height of about three feet on a tree. A spile of slippery elm was then placed at the base of each slash, allowing sap to run off the tree and into birch bark containers that were placed on the ground.

The collected sap was then poured into basswood troughs, and a heating process, known as the "hot stone boiling method" was soon underway. This technique involved adding fire-heated stones to the sap until the boiling point was reached. Over 90% of maple sap is water, which must be boiled off before the sugar content is increased to make syrup. It takes approximately 25 to 40 gallons of sap to produce one gallon of maple syrup, and we can appreciate the time and energy involved in making hundreds of gallons of syrup annually in this way. A method often used to remove part of the water prior to boiling was to let the sap freeze in the troughs overnight. The crust of ice which formed contained very little sugar, and would be taken off in the morning. After the syrup was made, most of it was further boiled and beaten to make sugar which could be stored easily. Maple syrup and sugar were used for sweetening vegetables and grains, in a special corn mash and syrup dish, and as a sweetener for medicines fed to children. "An Indian squaw would always have a makuk full of sugar near her cooking site, and during long hunting trips, maple sugar would sometimes be the only food to sustain the tribesmen," says Dana.

Under the supervision of Arboretum Education Coordinator Dr. Peter Dykeman, both students say they greatly increased their awareness of native Americans. Says Martha: "We frequently read about Indians in the West, but little is said about the rich history of tribes who preceded us in the Northeast."

This is an interesting area we live in," adds Dana, "and it has been fascinating to learn about what took place only a few hundred years ago." Both stress their concern for the fate of the modern Indian, and feel that in order to understand a people's culture, we must first understand their past.

On a larger scale, a similar exercise in ethnobotany was hosted at the Arboretum under Dr. Dykeman's direction last summer. During a six-week period, 25 high school students from throughout the country studied native American history, participated in archaeological digs, learned to identify, collect and store plant materials, and later went on to complete individual projects depending on their specific interests. Funded by the National Science Foundation, it is unlikely the program will be repeated in the near future because of cutbacks in Federally-funded programs.

"So many people are unaware of the real story behind native Americans," cautions Martha, "we don't want them to become forgotten."

Perhaps the interest and concern shared by Dana and Martha to stimulate others begins at the Cary Arboretum. During the eighth annual maple sugaring weekend, they will be on hand to share their enthusiasm and to pass information on to the public.

Since 1980, Maple Sugaring Weekend has included special lectures on sugaring techniques used by native Americans. Demonstrations in maple sugaring, which include modern-day step-by-step instructions on tapping, boiling and candy-making, and featuring taste-testing of homemade syrup on dollar-sized pancakes, make the weekend unique to the area.

Maple sugaring weekend begins at 11 a.m. on March 20 with lectures and demonstrations hourly until 4 p.m. The schedule is repeated on March 21. Admission is $2.50 for adults, $2.00 for senior citizens and $1.00 for children. For those with a greater appetite than a sample can fulfill, an all-you-can-eat lunch featuring pancakes, sausage, syrup and homemade butter will be served continuously from 11 a.m. to 4 p.m. on both days. Lunch prices are $3.75 for adults, $2.50 for children under 12, and no charge for children four years and under. Combination prices for the program and lunch will be available.

Thousands of people have attended Maple Sugaring Weekend. This year, due to the efforts of Peter Dykeman and two college students, it will be better than ever. Come help support these efforts and help add "Ethnobotany" to more vocabularies!

Reminder!

Maple sugaring weekend: March 20 and 21, 11 a.m. to 4 p.m. on the Gifford House grounds, Route 44A.

People at the Arboretum

Oscar Olson

Oscar Olson, Gardener ... . Perhaps one who is the most familiar with the Cary Arboretum grounds, Oscar was born and grew up on the land adjoining Cary property, and in the 1940's and 1950's farmed on acreage which is now the site of the Arboretum's greenhouse and nursery center.

After working on his father's dairy farm for 40 years, Oscar expanded the business by leasing neighboring property from Mary Flagler Cary. "For forty dollars a month I rented 300 acres, a house and a barn," he recalls. With 25 to 30 holstein cattle, Oscar was able to provide the Borden Company with thousands of gallons of raw milk for butter making. After joining the Dairyman's League in 1938, he shipped his milk to New York City, as well as to parts of Massachusetts and Connecticut.

With development of the Arboretum in 1971, Oscar accepted a temporary job building an irrigation system at the Arboreum's greenhouse site. He was soon hired part-time and later full-time on the Arboretum staff. "It was interesting to watch Cary grow," he says, "and I'm glad I was part of it." Although he was sorry to see his farming career end, he adds that joining the staff was like starting a second life; one with the activity he was accustomed to in farming, but without the long and tedious hours.

As a gardener, Oscar is responsible for lawn maintenance, planting and tractor work. His son John, who is also a gardener at the Arboretum, works in the greenhouse area; but the two occasionally work together on gardening jobs. Another son, Ed, works for the Town of Washington's Highway Department.

Oscar spends his weekends with his sons, his wife Shirley, and three grandchildren. All three families live on land that has been owned by Olsons for 70 years.

"Growing up here was wonderful," he smiles. And after speaking with him, it is obvious that he wouldn't have wanted to grow up or raise a family anywhere else.

Around the Arboretum

Free Plants at "Spring Thing"

Start spring off right by participating in the Arboretum's annual "Spring Thing!"

The event begins April 2, 11 a.m. to 5 p.m. with a sale of plants, gardening items, books and much more at the Arboretum's gift shop located in the Gifford House Education and Visitor Center, Route 44A. The sale continues on April 3, 11 a.m. to 5 p.m., and April 4, 1:00 to 5:00 p.m.

Between 9 a.m. and noon, stop at the Arboretum's greenhouse, Route 82, and receive a free houseplant. Each Arboretum member may choose one free plant from a selection of ferns, succulents and indoor flowering plants. Many other plants will be available for $1.00. Bring your favorite houseplants to the greenhouse during these hours for repotting and spring check-ups by the greenhouse staff. Friends of the Arboretum are entitled to have three plants repotted for free. One large tub may be substituted for three less-than-twelve-inch pots. For the general public, the repotting fee is $1.00 each up to twelve-inch pots. Prices for repotting larger containers are proportionately higher. Remember: B.Y.O.P. (bring your own pots!)

Art Works On Display

Works of Hudson River Psychiatric Center artists are currently on display at both the Arboretum's Plant Science Building and Gifford House, Route 44A.

The exhibit, which is the result of work done during art therapy sessions for current inpatients of the center, includes a variety of subjects, such as geometric abstractions, nature studies, and science fiction-style illustrations in acrylics, watercolor, pencil, crayon, and marker.

Many pieces on display were created by patients who had little or no experience in painting or drawing. Other pieces represent the work of those who have had considerable training, either professionally or through the center. All works reflect a wide range of expertise, and spontaneity and originality are apparent.

The exhibit will continue through March 24, and can be viewed in both buildings Monday through Friday, 8:30 a.m. to 4:30 p.m., and weekends, 1:30 to 4:30 p.m.

Slide Talks, Courses Scheduled

During the months of March and April, a diverse selection of courses and lectures will be offered at the Gifford House Education and Visitor Center, Route 44A. Sunday afternoon slide talks during these months include "The Crimean and The Black Sea" on March 7 by Arboretum Assistant Director Dr. Thomas Elias, and "14,000 Miles on South American Rivers" on March 28 by free-lance writer/photographer Mark Mikolas. Both will be held at 3:00 p.m.

Courses open for registration through the Gifford House include floral drawing and painting for children, beginning March 11; a two-part herb gardening workshop on April 24 and May 15; a workshop on dried bouquet materials on April 26; a six-week course on sketching in and outdoors beginning April 27, and a course in outdoor watercolor which begins on April 29.

Friends of the Arboretum receive a 20% discount, and senior citizens a 10% discount on all courses. Slide lectures are offered free to "Friends." Fees for the general public are $1.50 for adults and $1.00 for children and senior citizens.

For more information, contact Mrs. Marcia Davis at (914) 677-5358.

Dr. Tillman

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research and development funds can be wisely made. We seek the least amount of adverse environmental and social impact possible."

It is predicted that to further increase agriculture production and to prevent future damage to the environment, soil and water management, including studies of soil preservation, wind breaks and irrigation, pest management, including biological timing of crops to minimize damage by pests, photosynthesis enhancement, including development of plants which will increase photosynthesis and therefore increase the productivity, and multiple cropping, including the use of companion and sequential plantings, will be among the imperatives for the future of small and large scale farming.

"Man has been abusive to his environment," says Dr. Tillman, "and to ensure quality agricultural products tomorrow, we must take steps today to protect and improve the world we live in."

The AAAS meeting, which was also attended by Arboretum Director Dr. Willard Payne, featured discussion on the global impact of man and his activities throughout the world.

Photographs in this issue by Robin Parow-Place

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